

Project - Applied Mathematics

Programme course

12 credits

Projektkurs i tillämpad matematik, CDIO

TATA62

Valid from: 2018 Spring semester

Determined by

Board of Studies for Electrical Engineering,
Physics and Mathematics

Date determined

Main field of study

Mathematics, Applied Mathematics

Course level

Second cycle

Advancement level

A1X

Course offered for

- Mathematics, Master's Programme
- Applied Physics and Electrical Engineering - International, M Sc in Engineering
- Applied Physics and Electrical Engineering, M Sc in Engineering

Specific information

The Entrepreneurship part overlap with other CDIO courses and cannot be included more than once in a degree.

Entry requirements

Note: Admission requirements for non-programme students usually also include admission requirements for the programme and threshold requirements for progression within the programme, or corresponding.

Prerequisites

The mandatory mathematics courses on the Applied Physics and Electrical Engineering programme. The course offers various projects, and depending on the project chosen additional prerequisites may be required. Knowledge about the LIPS project model

Intended learning outcomes

The project work shall be carried through in an industrial professional manner, and it shall

develop and solidify the participants' competence in the following areas:

- Analysing and structuring problems
- Seeking out and assimilating supplementary knowledge
- Writing and follow-up of project plans and time plans
- Actively contributing to the project group functioning well
- Applying knowledge from previous courses
- Taking initiatives and finding creative solutions
- Presenting results in writing and orally
- Potential and limitations of using mathematical modeling as a real-world problem solving method

The result of the project work shall:

- Maintain high technical standards, and be based on modern knowledge and methods in applied mathematics
- Be documented with a project plan, a time plan, and a technical report
- Be presented orally
- Be followed up in a project reflection document
- Fulfil the requirement specification

A purpose for the course is also for the students to acquire knowledge and abilities within the general area of entrepreneurship, with particular focus on business planning for new ventures. After the course, students should be able to:

- account for models that describe what it takes for a new venture to have a stable basis for further development and to assess the level of development of ventures using such models; and
- account for the information and analyses needed to evaluate a development project from a business point of view and have the ability to collect and analyse relevant information for the purpose.

Course content

The projects vary from one year to the other. They are based on knowledge from previous courses. For example, one project might be to model a medieval trebuchet mathematically, and the product could be a computer program for simulation.

Teaching and working methods

One lecture for presenting the project, and possibly some basic theory. The project group shall consist of at least four students. Each group is assigned a supervisor to support its work. Before the project work is started, the project group shall negotiate a requirement specification with the customer, and write a project plan and a time plan for the project.

The project shall be carried out according to the LIPS project model. The project documents shall adhere to the templates that are part of the LIPS model. The course runs over the entire autumn semester.

Examination

PRA1	Written and oral presentation of the project	U, G	9 credits
UPG1	Entrepreneurship assignments	U, G	3 credits

The project work will be judged by the fulfilment of the aims of the course. The following three items are each graded by pass/fail: written documentation, oral presentation, and LIPS documents (including at least project plan, time plan, and a project reflection document). For a passing grade on the whole project, it is required that all three items are approved, and that the aims of the course are fulfilled. Grades are given as 'Fail' or 'Pass'.

Grades

Two grade scale, older version, U, G

Department

Matematiska institutionen

Director of Studies or equivalent

Jesper Thorén

Examiner

Danyo Danev

Course website and other links

<http://www.commsys.isy.liu.se/en/student/kurser/TATA62>

Education components

Preliminary scheduled hours: 20 h

Recommended self-study hours: 300 h

Course literature

Compendiums

Other

Previous course literature and additional literature depending on the project

Common rules

Course syllabus

A syllabus has been established for each course. The syllabus specifies the aim and contents of the course, and the prior knowledge that a student must have in order to be able to benefit from the course.

Timetabling

Courses are timetabled after a decision has been made for this course concerning its assignment to a timetable module. A central timetable is not drawn up for courses with fewer than five participants. Most project courses do not have a central timetable.

Interrupting a course

The vice-chancellor's decision concerning regulations for registration, deregistration and reporting results (Dnr LiU-2015-01241) states that interruptions in study are to be recorded in Ladok. Thus, all students who do not participate in a course for which they have registered must record the interruption, such that the registration on the course can be removed. Deregistration from a course is carried out using a web-based form: www.lith.liu.se/for-studenter/kurskomplettering?f=sv.

Cancelled courses

Courses with few participants (fewer than 10) may be cancelled or organised in a manner that differs from that stated in the course syllabus. The board of studies is to deliberate and decide whether a course is to be cancelled or changed from the course syllabus.

Regulations relating to examinations and examiners

Details are given in a decision in the university's rule book:
<http://styrdokument.liu.se/Regelsamling/VisaBeslut/622678>.

Forms of examination

Examination

Written and oral examinations are held at least three times a year: once immediately after the end of the course, once in August, and once (usually) in one of the re-examination periods. Examinations held at other times are to follow a decision of the board of studies.

Principles for examination scheduling for courses that follow the study periods:

- courses given in VT1 are examined for the first time in March, with re-examination in June and August
- courses given in VT2 are examined for the first time in May, with re-examination in August and October
- courses given in HT1 are examined for the first time in October, with re-examination in January and August
- courses given in HT2 are examined for the first time in January, with re-examination at Easter and in August.

The examination schedule is based on the structure of timetable modules, but there may be deviations from this, mainly in the case of courses that are studied and examined for several programmes and in lower grades (i.e. 1 and 2).

- Examinations for courses that the board of studies has decided are to be held in alternate years are held only three times during the year in which the course is given.
- Examinations for courses that are cancelled or rescheduled such that they are not given in one or several years are held three times during the year that immediately follows the course, with examination scheduling that corresponds to the scheduling that was in force before the course was cancelled or rescheduled.
- If teaching is no longer given for a course, three examination occurrences are held during the immediately subsequent year, while examinations are at the same time held for any replacement course that is given, or alternatively in association with other re-examination opportunities. Furthermore, an examination is held on one further occasion during the next subsequent year, unless the board of studies determines otherwise.
- If a course is given during several periods of the year (for programmes, or on

different occasions for different programmes) the board or boards of studies determine together the scheduling and frequency of re-examination occasions.

Registration for examination

In order to take an examination, a student must register in advance at the Student Portal during the registration period, which opens 30 days before the date of the examination and closes 10 days before it. Candidates are informed of the location of the examination by email, four days in advance. Students who have not registered for an examination run the risk of being refused admittance to the examination, if space is not available.

Symbols used in the examination registration system:

** denotes that the examination is being given for the penultimate time.

* denotes that the examination is being given for the last time.

Code of conduct for students during examinations

Details are given in a decision in the university's rule book:
<http://styrdokument.liu.se/Regelsamling/VisaBeslut/622682>.

Retakes for higher grade

Students at the Institute of Technology at LiU have the right to retake written examinations and computer-based examinations in an attempt to achieve a higher grade. This is valid for all examination components with code "TEN" and "DAT". The same right may not be exercised for other examination components, unless otherwise specified in the course syllabus.

Retakes of other forms of examination

Regulations concerning retakes of other forms of examination than written examinations and computer-based examinations are given in the LiU regulations for examinations and examiners,
<http://styrdokument.liu.se/Regelsamling/VisaBeslut/622678>.

Plagiarism

For examinations that involve the writing of reports, in cases in which it can be assumed that the student has had access to other sources (such as during project work, writing essays, etc.), the material submitted must be prepared in accordance with principles for acceptable practice when referring to sources (references or quotations for which the source is specified) when the text, images, ideas, data, etc. of other people are used. It is also to be made clear whether the author has reused his or her own text, images, ideas, data, etc. from previous examinations.

A failure to specify such sources may be regarded as attempted deception during examination.

Attempts to cheat

In the event of a suspected attempt by a student to cheat during an examination, or when study performance is to be assessed as specified in Chapter 10 of the Higher Education Ordinance, the examiner is to report this to the disciplinary board of the university. Possible consequences for the student are suspension from study and a formal warning. More information is available at <https://www.student.liu.se/studenttjanster/lagar-regler-rattigheter?l=sv>.

Grades

The grades that are preferably to be used are Fail (U), Pass (3), Pass not with distinction (4) and Pass with distinction (5). Courses under the auspices of the faculty board of the Faculty of Science and Engineering (Institute of Technology) are to be given special attention in this regard.

1. Grades U, 3, 4, 5 are to be awarded for courses that have written examinations.
2. Grades Fail (U) and Pass (G) may be awarded for courses with a large degree of practical components such as laboratory work, project work and group work.

Examination components

1. Grades U, 3, 4, 5 are to be awarded for written examinations (TEN).
2. Grades Fail (U) and Pass (G) are to be used for undergraduate projects and other independent work.
3. Examination components for which the grades Fail (U) and Pass (G) may be awarded are laboratory work (LAB), project work (PRA), preparatory

written examination (KTR), oral examination (MUN), computer-based examination (DAT), home assignment (HEM), and assignment (UPG).

4. Students receive grades either Fail (U) or Pass (G) for other examination components in which the examination criteria are satisfied principally through active attendance such as other examination (ANN), tutorial group (BAS) or examination item (MOM).

The examination results for a student are reported at the relevant department.

Regulations (apply to LiU in its entirety)

The university is a government agency whose operations are regulated by legislation and ordinances, which include the Higher Education Act and the Higher Education Ordinance. In addition to legislation and ordinances, operations are subject to several policy documents. The Linköping University rule book collects currently valid decisions of a regulatory nature taken by the university board, the vice-chancellor and faculty/department boards.

LiU's rule book for education at first-cycle and second-cycle levels is available at http://styrdokument.liu.se/Regelsamling/Innehall/Utbildning_pa_grund-_och_avancerad_niva.